Claims

1. (Original) A self-lubricating bearing for use in low pressure, high frequency, small amplitude applications, the bearing having a self-lubricating liner and a counterface surface in close sliding contact therewith, the counterface surface having a surface finish of less than 20nm and a hardness of less than in the region of 1000VPN.

2. (Original) A self-lubricating bearing according to Claim 1, wherein the surface finish of the counterface surface is in the range of 5nm to 20nm.

3. (Previously Presented) A self-lubricating bearing according to Claim 1, wherein the counterface surface comprises a coating on a curved surface, the curved surface having an electrolytically ground finish.

4. (Original) A self-lubricating bearing according to Claim 3, wherein the coating over the electrolytically ground finish has a thickness of between 1-5μm.

5. (Previously Presented) A self-lubricating bearing according to Claim 3, wherein the coating is a chemical deposition coating, a physical vapour deposition coating or an ion plating coating.

6. (Previously Presented) A self-lubricating bearing according to Claim 1, wherein the bearing is a spherical bearing.

7. (Original) A self-lubricating bearing according to Claim 6, wherein the spherical bearing includes a ball, the ball providing the counterface surface.

8. (Previously Presented) A self-lubricating bearing according to Claim 1, wherein the operating conditions, in use, are at stresses of less than 35MPa, at a frequency of at least 0.1 Hz and with amplitudes comprising small angular motions of less than $\pm 12^{o}$ rotation.

9. (Previously Presented) A method of constructing a self-lubricating bearing comprising the steps of:

providing a self-lubricating liner with a curved surface;

providing a counterface having a curved surface, wherein the curved surface of the counterface has a surface finish of less than 20nm and a hardness of less than 1000VPN; and

placing the curved surfaces of the liner and the counterface surface in sliding contact with one another.

10. (Original) A method according to Claim 9, wherein the curved surfaces are correspondingly curved surfaces.

11. (Original) A method of operating a self-lubricating bearing having a self-lubricating liner and a counterface surface in close sliding contact therewith, the counterface surface having a surface finish of less than 20nm and a hardness of less than 1000VPN, wherein the operating conditions are at stresses of less than 35MPa, at a frequency of at least 0.1 Hz and with amplitudes comprising small angular motions of less than $\pm 12^{o}$ rotation.

12. (Canceled)

13. (Previously Presented) A method according to Claim 9, wherein the bearing is a spherical bearing comprising a ball, and the counterface is a surface of the ball.

14. (Previously Presented) A method according to Claim 9, further comprising forming a coating on the curved surface of the counterface, wherein the coating provides the counterface surface in sliding contact with the liner.

15. (Previously Presented) A method according to Claim 14, wherein the coating is a chemical deposition coating, a physical vapour deposition coating or an ion plating coating.

16. (Previously Presented) A method according to Claim 9, wherein the counterface surface has a hardness of less than 750VPN.

17. (Previously Presented) A method according to Claim 14, wherein the coating has a thickness in the range of about 1-5μm.

18. (Previously Presented) A method according to Claim 11, wherein the bearing is a spherical bearing comprising a ball, and the counterface surface is a surface of the ball.

19. (Previously Presented) A method according to Claim 18, wherein the ball is a heat treated metal ball.

20. (Previously Presented) A method according to Claim 19, wherein the ball has a physical vapour deposition coating providing the counterface surface in sliding contact with the liner.

21. (Previously Presented) A method according to claim 9, wherein providing a counterface having a curved surface further comprises electrolytically grinding the curved surface.